DDI-3897-82

25X1

Executive Registry
82-2196/

22 January 1982

MEMORANDUM FOR: Director of Central Intelligence
Deputy Director of Central Intelligence

VIA : Deputy Director for Intelligence

FROM : [redacted] 25X1
Director of Soviet Analysis

SUBJECT : DCI Memorandum, 15 January 1982, "Soviet Economy/Siberian Pipeline

1. Your 15 January 1982 memorandum raises two issues relating to Soviet pipeline construction, namely:

-- the importance of US equipment and technology other than compressor components for the Siberia - Western Europe pipeline, and

-- the number of BACKFIREs the Soviets would be denied if they had to use their own compressors to meet their internal pipeline needs as well as those related to the export pipeline project.

As instructed, we have drafted a memorandum for NSPG principals addressing these questions.

2. In your memorandum, you asked whether [redacted] had 25X1
brought to your attention the importance to the USSR of US experience in building pipelines in freezing temperatures. We did not. We have looked at Soviet dependence on the various aspects of foreign oil and gas technology, but neither [redacted] our oil analysts have 25X1
identified US cold-temperature technology as a key consideration in the rate of Soviet pipeline construction. We know the USSR buys from US firms the kind of equipment and material described in the last paragraph of the 15 January Washington Post article but do not judge the availability of these items to be a pacing factor in Soviet pipeline construction. The USSR successfully pioneered the construction of 1,420 mm. (56-inch) pipeline. Much of the 16,000 km. of this size pipe laid since 1972 (and the 20,000 km. now planned) is in sub-Arctic areas. Despite a record of flaws and repairs in Soviet pipelines, the annual growth in gas transmission has been proceeding at record rates.

-- In instances where the United States has superior cold-temperature technology, the Soviet Union can buy serviceable technology and equipment elsewhere in the West or fall back on older technology supplied domestically. 25X1

-- Much Western (including US) technology of this kind already employed in the USSR's gigantic domestic pipeline building program can be concentrated on construction of highest priority lines, such as that from West Siberia to Western Europe.

-- The USSR could absorb the slight losses in domestic gas availability arising from a denial of the US technology mentioned in the Washington Post paragraph.

In sum, Moscow would like to have this technology for the Siberia-Western Europe pipeline but has second-best alternatives. The key to timely completion of the export pipeline, as well as the five large-diameter pipelines planned for 1981-85, is the availability of Western large-diameter line pipe and valves and compressors. The domestic gas pipeline program also depends heavily on access to Western pipe because the Soviet steel industry cannot meet the enormous demands for high-quality large-diameter pipe stemming from plans to shift the USSR's energy balance away from oil and toward gas.

3. If the Soviets were denied all of the Western turbine-drive compressors for the planned export pipeline--and were nonetheless determined to proceed with the line on a high-priority basis--we believe that a start in gas deliveries around 1986 would still be possible. Drastic adjustments in plans and equipment supply for the compressor stations would, of course, be necessary. But the fact that the Soviets plan to build in the same period five additional large-diameter pipelines for domestic transmission of natural gas (relying largely on Soviet equipment) suggests some flexibility with respect to providing compressor power for the export pipeline.

-- As has been done in the past, some compressors could be obtained from existing lines in areas where gas production is declining, or spares could be removed from stations on other lines at some cost in reliability of those lines.

-- Compressor station plans, materials, and equipment could be transferred from one or more of the planned domestic lines to the export line, delaying completion of domestic lines or resulting in their operation at less than designed capacity.

-- The Soviets could add to domestically-produced compressor power by the mid-1980s by increasing somewhat the production of turbine models already configured for mechanical drive in pipeline service (mostly 6 to 10 MW) and possibly by speeding the introduction of 12, 16, and 25 MW units that have been under development and testing.

-- The Soviets could convert more of their turbine engines retired from aircraft service into mechanical-drive units for pipeline service. Enough large aircraft engines are being retired annually (including about 50 per year from BACKFIREs) to replace Western turbines denied to the export pipeline without affecting aircraft production or flight operations. (Replacing the 120 GE-type 25 MW turbines on order for the export pipeline with some of the larger engines being retired from civilian and military aircraft service--estimated at from 8 MW equivalent for the CARELESS engine to 13 MW for the

BACKFIRE engine after conversion to mechanical-drive--would require 250 to 300 engines. As many as 100 to 150 engines from six or seven models of large aircraft become surplus annually having reached the maximum acceptable number of flight hours.)

4. If all turbine requirements for the six 56-inch pipelines now planned were to be met by use of large aircraft engines, overall aircraft production would probably be affected only slightly (mostly civil and almost certainly not BACKFIRE), but some cutback in flight operations would be likely. Soviet aircraft engine life and maintenance practices require large numbers of spare engines to satisfy the requirement of engine removal for frequent overhaul at rear depots. If spare engine production were diverted to pipeline usage, the Soviets would have two options. They could extend the time to overhaul (accepting the increased risk of engine failure) or decrease aircraft operating hours.

5. The disruption of planned progress on large-diameter pipeline construction resulting from a complete cutoff of access to Western compressor drives would be considerable. In a recent year, one third of the pipeline compressor drives installed were of Western manufacture. Delayed completion of lower priority lines, reduction of operating pressures and gas throughput, loss of reliability and increased maintenance difficulties on pipelines all would occur. We expect the Soviet energy balance to be under great strain in the mid-1980s. The loss of gas resulting from the denial of all Western equipment would be a serious blow to the economy.

6. There is considerable uncertainty, however, as to production levels and plant capacities for aircraft engines and almost no hard information concerning these aspects of the industrial turbine industry, especially over the next few years. We are seeking [redacted] 25X1
[redacted] about Soviet progress in developing pipeline-service turbines more 25X1
powerful than existing models and what the USSR is doing to find new sources of turbines now that the US supplier has been denied permission to export the critical parts. Although new information is flowing in daily, several technical, industrial, and commercial questions relating to non-US Western alternatives remain unresolved, as do important questions concerning internal Soviet capabilities. Our analysis must therefore still be considered provisional.

[redacted] 25X1

Attachment: as stated.